

REMARKS

By this response, claims 5, 8, 9, 11-13 and 19-21 have been amended, and claims 7 and 18 have been cancelled, leaving claims 1-6, 8, 9, 11-17 and 19-21 pending in the application. Claim 5 has been rewritten in independent form to include the combined features of claims 1 and 5 without narrowing its scope. Other claims have been amended for further clarification and to be consistent with claim 1. The specification has been amended to address minor informalities.

Applicants submit that (1) the amendments do not raise any new issue that would necessitate further search and/or consideration; (2) the amendments do not raise the issue of new matter; (3) no additional claims have been added; and (4) the amendments place the application in better form for appeal. Therefore, entry of the amendments is respectfully requested.

Reexamination and reconsideration of the application are respectfully requested in light of the following remarks.

REJECTION UNDER 35 U.S.C. § 103

Claims 1-9 and 11-21 stand rejected under 35 U.S.C. § 103(a) over the publication by Basol et al. ("Basol"), in view of JP 63107073 ("JP '073") or JP 01105581 to ("JP '581") in view of U.S. Patent No. 4,255,208 to Deutscher et al. ("Deutscher") for the reasons stated at pages 2-4 of the Office Action. Claims 7 and 18 have been cancelled. The rejection is respectfully traversed.

Claim 1 recites a "method to produce a solar cell wherein on a substrate a dissolvable intermediate layer is deposited, on the intermediate layer a layer structure is deposited, the intermediate layer is dissolved subsequently, which

separates the layer structure from the substrate, and thereby from the layer structure a flexible solar cell is formed, wherein said solar cell has an absorber layer consisting of a material of the group of I-III-VI compounds of the periodic system or a material of the group of II-VI compounds of the periodic system” (emphasis added). The applied references fail to suggest the claimed method for the following reasons.

Basol discloses forming copper indium diselenide (CIS) solar cells on polyimide substrates. The structure shown in Fig. 1 includes a polyimide substrate, a Mo layer on the substrate, a CIS absorber film on the Mo layer, and an outer composite window layer consisting of a CdS film and a boron-doped transparent conductive ZnO layer. Basol's objective was to demonstrate a high-efficiency CIS solar cell on an insulating, flexible polymeric substrate. See page 94, second paragraph of Basol.

The Office Action admits that Basol does not disclose a resin layer on a substrate, or forming a dissolvable intermediate layer on a substrate followed by successive formation of a resin layer and I-III-VI or II-VI solar cell layers, and removing the substrate by dissolving the intermediate layer.

However, the Office Action asserts that JP '073 or JP '581 teaches forming solar cells on a resin layer 2 coated on a substrate 1 and separating the substrate from the resin layer having a solar cell to result in a solar cell structure having a flexible substrate. The Office Action further asserts that it would have been obvious to form a resin layer between Basol's polyimide substrate and solar cell layers, and to remove the substrate to have a lightweight and thin flexible solar cell.

The Office Action also admits that each of Basol, JP '073 and JP '581 fails to suggest forming an intermediate layer of sodium chloride or sodium fluoride and separating the solar cell by dissolving the intermediate layer.

However, the Office Action asserts that Deutscher discloses coating a substrate with water dissolvable sodium chloride, forming solar cell device layers, and separating the substrate from the solar cell by dissolving the sodium chloride intermediate layer.

The Office Action contends that:

It would have been obvious ... to deposit intermediate layer of sodium chloride on polyimide substrate in the invention of Basol prior to form resin layer as suggested by the teaching of Koshiro or Yasuo, removing the thick substrate by dissolving the intermediate layer because such alternative process would remove 50 micron thick substrate by dissolving the intermediate layer and would result flexible solar cells of I-III-VI formed on thin resin layer

Applicants respectfully disagree with the above-discussed assertions. In order to establish a case of *prima facie* obviousness, there must be some motivation, either in the references themselves, or in knowledge generally available to one having ordinary skill in the art, to modify a reference or to combine reference teachings in the manner advanced by the Patent Office. See MPEP § 2142, page 2100-128. In addition, it is insufficient that applied references can be combined or modified; rather, the applied references must also suggest the desirability of the combination or modification advanced by the Patent Office. See MPEP § 2143.01, page 2100-131. See also In re Fritch, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). Obviousness cannot be established unless the applied references provide an incentive supporting the combination. See, e.g., In re Geiger, 2 USPQ2d 1276 (Fed. Cir. 1987). These requirements have not been met in the present application.

The Office Action asserts that it would have been obvious to modify Basol's disclosed method of making a solar cell to add steps of incorporating a flexible resin layer between Basol's flexible polyimide substrate and overlying solar cell layers, and then removing the flexible polyimide substrate from the remaining structure, i.e., the added overlying flexible resin layer and the solar cell layers. This modification would result in the modified Basol solar cell structure having a flexible resin layer as the substrate. However, the Basol solar cell structure already includes a polyimide substrate, which is light-weight and flexible. Thus, the modification of Basol's method advanced in the Office Action would result in replacing one flexible polymeric substrate (i.e., the polyimide substrate) with another flexible polymeric substrate, thereby providing a modified solar cell structure that includes a flexible polymeric substrate and overlying solar cell layers. In other words, the modified solar cell structure would have the same elements that the disclosed Basol solar cell device already has.

Applicants submit that the applied references fail to provide the required motivation to modify Basol's method of making a solar cell device in the manner that has been proposed in the Office Action. The proposed modification would require the performance of additional steps with corresponding additional costs, yet the resulting modified solar cell would have the same elements that the Basol solar cell device already has. As such, the applied references fail to provide any incentive for modifying Basol's disclosed solar cell device in the manner proposed in the Office Action.

Furthermore, Deutscher fails to cure the deficiencies of Basol, JP '073 and JP '581 with respect to the method recited in claim 1. As explained above, Basol's solar cell device already has a flexible polyimide substrate. Accordingly, the applied references provide no motivation to modify Basol's method by incorporating another flexible substrate between Basol's disclosed flexible polyimide substrate and the overlying solar cell layers in the manner advanced in the Office Action. As such, the applied references further fail to provide any motivation to yet further modify Basol's method to add steps of incorporating a dissolvable intermediate layer between the Basol's flexible polyimide substrate and the overlying solar cell layers, and then dissolving the intermediate layer to separate the added flexible substrate layer from the disclosed flexible polyimide substrate. Such additional modification of Basol's method would require the performance of yet additional steps with yet additional costs, while the resulting modified solar cell would have the same elements that the Basol solar cell device already has. As such, the applied references also fail to provide any incentive for further modifying Basol's solar cell device by incorporating a dissolvable intermediate layer between the Basol's flexible polyimide substrate and the overlying solar cell layers.

For at least the above reasons, the applied references would not have rendered obvious the method recited in claim 1. Thus, claim 1 is patentable.

Dependent claims 2-6, 8, 9, 11-17 and 19-21 are also patentable over the applied references for at least the same reasons as those discussed above with respect to claim 1.

Therefore, withdrawal of the rejection is respectfully requested.

CONCLUSION

For the foregoing reasons, allowance of the application is respectfully requested. Should the Examiner wish to discuss this response, Applicants' undersigned representative can be reached at the telephone number given below.

Respectfully submitted,

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Date: January 21, 2005

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